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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,616	03/23/2004	Michael R. Brininstool	96105	2657

32697 7590 06/30/2005
OFFICE OF PATENT COUNSEL
SPAWARSYCEN, CODE 20012
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SAN DIEGO, CA 92152-5765

EXAMINER

PENG, CHARLIE YU

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/806,616

Applicant(s)

BRININSTOOL, MICHAEL R.

Examiner

Charlie Peng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/23/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,885,792 to Eggleton et al. in view of U.S. PGPub 2003/0161636 to Ohta et al. Eggleton teaches a plurality of tilted (blazed) fiber Bragg gratings 16/17/18 that convert light from a core-guided mode to a radiation mode through the cladding and out of the fiber, where radiated light is received by photodetectors 21/22/23. Eggleton further teaches that each of the gratings taps and radiates a different wavelength band. Therefore, a light source that generates an input signal 12 must be inherently multi-wavelength even though Eggleton does not specifically state such information. (See at least Fig. 1 and its descriptions) Eggleton does not teach the gratings being arranged in a circular or curvature manner. Ohta teaches a plurality of tilted (blazed) fiber Bragg gratings 511 being arranged in a circular/curvature manner wherein an input optical signal 12 is deflected by the gratings to a single focusing lens 530 and a photo receiver 17. (Similar concepts are introduced by US Patents 6,016,375 to Hill et al. and 5,061,032 to Meltz et al.) It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the design by Ohta to guide a multiple wavelength signal passed through a plurality of blazed fiber Bragg gratings. The

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motivation would be that it allows deflected optical signals to share a common photo receiver (or photodetector) without excessive crosstalking among the signals, therefore a reduction in number of parts and manufacturing costs.

With specific reference to claims 2, 8, and 14 the applicant presented a derivation of the governing equation for gratings: $m\lambda = d(\sin \alpha + \sin \phi)$, where α is the angle of incidence into the grating. In the instant application, $m=1$ (see statement regarding claims 3, 9, and 15 below) and $\alpha=90^\circ$ (incident light propagates in a direction parallel to the gratings), and the equation can be further reduced to $\frac{\lambda}{d} - 1 = \sin \phi$.

Applicant discloses that the grating spacing should be within a range of $0.8\lambda \sim 1.2\lambda$, which essentially is stating that the diffracted angle ϕ should be within a range of approximately $-10^\circ \sim 10^\circ$. It would have been obvious to an ordinary artisan at the time the invention was made to limit the diffracted angle ϕ to a small range. The motivation would be that large diffracted angles increase the potential for crosstalking among diffracted optical signals and make it more difficult to direct the optical signals to a signal common photodetector (or a focusing lens, etc.).

With specific reference to claims 3, 9, and 15, blazed gratings are manufactured to produce maximum efficiency at designated wavelengths, i.e., blazed gratings are commonly said to be "blazed at ### nm", and a blazed grating in first order (or $m=1$) is of the maximum efficiency, whereas efficiency of each of the subsequent higher orders decreases as the order m increases.

With specific reference to claims 4 and 10, simplified governing equation

$\frac{\lambda}{d} - 1 = \sin \phi$ dictates that the diffracted angle ϕ (i.e. the angle that indicates the direction of diffracted light away from an axis normal to the grating) is determined by the input light's wavelength and the grating's spacing and the direction of the diffracted light would inherently change along with the radius of the bend fiber.

With specific reference to claims 5, 6, 11, 12, 16, and 17, lasers, including tunable lasers and multiple wavelength lasers, are extremely well known to be light sources in optical applications. For example, U.S. Patent 6,137,570, part 402 is a laser light source. It would have been obvious to one having ordinary skill in the art to select a tunable or multiple wavelength laser to be the light source for Eggleton and Ohta. The motivation would be that they offer the advantage that different wavelengths are selectable to optimize the system performance.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please PTO-892 for additional references cited.

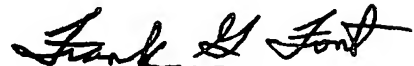
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charlie Peng whose telephone number is (571) 272-2177. The examiner can normally be reached on 9 am - 6 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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